

### **REMARKS/ARGUMENTS**

This paper is being provided in response to the Office Action dated May 8, 2007 for the above-referenced application. In this response, Applicant has canceled Claims 24 and 48, and amended Claims 1, 2, 5, 22, 25, 29, 30, 33, 46 and 49 in order to clarify that which Applicant deems to be the claimed invention. Applicant respectfully submits that the amendments to the claims are supported by the originally filed application.

Applicant thanks the Examiner for the indication regarding the allowance of Claims 3, 6-9, 15, 20, 21, 27, 28, 31, 34-37, 43, 51, and 52.

The rejection of Claims 1, 2, 4, 5, 10-14, 18, 19, 22-26, 29, 30, 32, 33, 38-42, and 46-50 under 35 U.S.C. § 102(e) as being unpatentable over Farmer et al (U.S. Patent No. 7,007,043, hereinafter referred to as "Farmer") is hereby traversed and reconsideration thereof is respectfully requested. Applicant respectfully submits that this rejection as applied to Claims 24 and 48 is moot in view of the cancellation of Claims 24 and 48 herein. Applicant respectfully submits that Claims 1, 2, 4, 5, 10-14, 18, 19, 22, 23, 25, 26, 29, 30, 32, 33, 38-42, and 46, 47, 49, and 50, as amended herein, are patentable over the cited reference.

Claim 1, as amended herein, recites a method for providing a backup copy of data on a primary storage comprising: receiving a write request from one of a plurality of sources; journaling said write request in one of a plurality of partial journals, wherein each of said plurality of partial journals is used to journal a portion of write requests received from a different one of said plurality of sources, wherein each of said plurality of partial journals is emptied to a

primary journal including partial journal entries and merged partial journal entries, each of the merged partial journal entries representing application of one or more data modifications for a time period to a storage location; and updating said primary storage in accordance with said write request. Claims 2, 4, 5, and 10-14 depend from Claim 1.

Claim 18 recites a system that performs a continuous back up of data included in a primary storage unit, comprising: a switch including input ports, each of said input ports being associated with a processor and a portion of memory; a plurality of partial journals, each of said plurality of partial journals being associated with a unique one of said input ports and being stored in said portion of memory associated with said unique input port, said each partial journal including journal entries for write requests received on said unique input port; and a primary journal incorporating portions of said plurality of partial journals associated with write requests that have occurred earlier in time than those entries currently included in said partial journals. Claim 19 depends from Claim 18.

Claim 22, as amended herein, recites a method for providing a backup copy of data on a primary storage comprising: receiving, from one of a plurality of sources, a write request for a location in primary storage; receiving a copy of data at said location on said primary storage; journaling said write request in one of a plurality of partial journals in a partial journal entry including said copy prior to performing said write request, each of said plurality of partial journals being associated with journaled write requests received from a different one of said plurality of sources, wherein each of said plurality of partial journals is emptied to a primary journal including partial journal entries and merged partial journal entries, each of the merged

partial journal entries representing application of one or more data modifications for a time period to a storage location; and updating said primary storage in accordance with said write request. Claims 23, 25 and 26 depend from Claim 22.

Claim 29, as amended herein, recites a computer readable medium encoded with a computer program that provides a backup copy of data on a primary storage, the computer program comprising code that: receives a write request from one of a plurality of sources; journals said write request in one of a plurality of partial journals, wherein each of said plurality of partial journals is used to journal a portion of write requests received from a different one of said plurality of sources, wherein each of said plurality of partial journals is emptied to a primary journal including partial journal entries and merged partial journal entries, each of the merged partial journal entries representing application of one or more data modifications for a time period to a storage location; and updates said primary storage in accordance with said write request. Claims 30, 32, 33, and 38-42 depend from Claim 29.

Claim 46, as amended herein, recites a computer readable medium encoded with a computer program that provides a backup copy of data on a primary storage, the computer program comprising code that: receives, from one of a plurality of sources, a write request for a location in primary storage; receives a copy of data at said location on said primary storage; journals said write request in one of a plurality of partial journals in a partial journal entry including said copy prior to performing said write request, each of said plurality of partial journals being associated with journaled write requests received from a different one of said plurality of sources, wherein each of said plurality of partial journals is emptied to a primary

journal including partial journal entries and merged partial journal entries, each of the merged partial journal entries representing application of one or more data modifications for a time period to a storage location; and updates said primary storage in accordance with said write request. Claims 47, 49, and 50 depend from Claim 46.

Farmer is directed toward a backup system that can create a number of mountable representations of past contents of a storage volume. (Col. 1, Lines 20-24; Col. 2, Lines 40-45). Farmer discloses arrangements including a data management appliance 112 and 208. (See Figures 1 and 2). The data management appliance is programmed to behave as though it stores a number of duplicate copies of primary storage device 108 as it existed at certain points in time. (Col. 3, Lines 50-53). A number of schemes are available for providing replicated storage in a data management appliance. A Mirror in the Middle (MIM) replication scheme is disclosed in which atomic write events are recorded in a forward journal immediately so that data is always protected essentially as soon as it is created. At specified points in time, forward journal entries are used to produce snapshots recorded in a backward journal (Col. 4, Lines 13-29). Farmer also discloses a replication scheme using a self archiving log-structured volume recording every write event in a new location in primary storage. (Col. 4, Lines 32-47). Farmer discloses publishing point-in-time views of a primary storage device and making available a limited number of virtual views. (Col. 4, Lines 47-65).

Claim 1, as amended herein, is neither disclosed nor suggested by Farmer in that Farmer neither discloses nor suggests at least the features of *a method for providing a backup copy of data on a primary storage comprising: ... journaling said write request in one of a plurality of*

*partial journals, wherein each of said plurality of partial journals is used to journal a portion of write requests received from a different one of said plurality of sources, wherein each of said plurality of partial journals is emptied to a primary journal including partial journal entries and merged partial journal entries, each of the merged partial journal entries representing application of one or more data modifications for a time period to a storage location ..., as set forth in Claim 1.*

Page 3 of the Office Action cites Col. 1, Lines 35-40, Col. 2, Lines 55-56 and Col. 4, Lines 24-27, and Lines 50-65 as support for disclosing the claimed step of journaling of Applicant's Claim 1. Col. 1, Lines 35-40 disclose using "some kind of journaling where write commands themselves are archived". Col. 2, Lines 55-56 disclose journaling changes on a secondary storage device. Col. 4, Lines 24-27 disclose using forward journal entries to produce snapshots reflecting the change in the primary storage over a period of time, and recording the snapshots in a backward journal. Col. 4, Lines 50-65 describe making a limited number of virtual views "publicly available" or as publishing the point in time view.

Applicant respectfully submits that the foregoing citations of Farmer disclose journaling write events or write commands and producing snapshots reflecting the change in the primary storage over a period of time. Farmer discloses forward journal entries reflecting the change in the primary storage over a period of time and producing snapshots using the forward journal entries. As snapshots are produced, the forward journal entries are applied to the MIM and discarded. (See Col. 4, Lines 24-31). However, Farmer does not disclose or fairly suggest a primary journal including partial journal entries and merged journal entries. As such, Farmer

does not disclose or fairly suggest *wherein each of said plurality of partial journals is emptied to a primary journal including partial journal entries and merged partial journal entries, each of the merged partial journal entries representing application of one or more data modifications for a time period to a storage location*, as set forth in amended Claim 1.

In view of the foregoing, Applicant respectfully submits that the Farmer does not teach, disclose, or suggest at least the foregoing recited features of Claim 1. Accordingly, Claim 1, and claims that depend therefrom, are neither disclosed nor suggested by Farmer for at least these reasons.

Applicant's independent Claims 22, 29 and 46 recite features similar to those set forth above regarding Claim 1 which are neither disclosed nor suggested by Farmer. Thus, for reasons similar to those set forth regarding Claim 1, Applicant's Claims 22, 29 and 46, and claims that depend therefrom, are also neither disclosed nor suggested by Farmer.

Applicant's Claim 18 is neither disclosed nor suggested by Farmer in that Farmer neither discloses nor suggests at least the features of *a system that performs a continuous back up of data included in a primary storage unit, comprising: ... a plurality of partial journals, each of said plurality of partial journals being associated with a unique one of said input ports and being stored in said portion of memory associated with said unique input port, said each partial journal including journal entries for write requests received on said unique input port; ...* as set forth in Claim 18.

Page 5 of the Office Action cites to element 408 of Figure 4 as support for disclosing Applicant's claimed switch. Page 5 of the Office Action also cites Col. 1, Lines 35-40, Col. 2, Lines 55-56 and Col. 4, Lines 24-27 and Lines 50-65 as support for disclosing the claimed partial journals as set forth in Claim 18. Applicant cannot locate where in the foregoing citations, or elsewhere in Farmer, is there any disclosure or suggestion of associating a partial journal with a unique one of the input ports of a switch and, including in the partial journal, journal entries for write requests received on the associated unique input port. Accordingly, Applicant respectfully submits that Farmer does not disclose or suggest at least the features of *a plurality of partial journals, each of said plurality of partial journals being associated with a unique one of said input ports and being stored in said portion of memory associated with said unique input port, said each partial journal including journal entries for write requests received on said unique input port*, as recited in Claim 18. Accordingly, for at least these reasons, Claim 18, and claims that depend therefrom, are neither disclosed nor suggested by Farmer.

In view of the foregoing, Applicant respectfully requests that the rejection be reconsidered and withdrawn.

The rejection of Claims 16, 17, 44 and 45 under 35 U.S.C. § 103(a) as being unpatentable over Farmer is hereby traversed and reconsideration thereof is respectfully requested. Applicant respectfully submits that Claims 16, 17, 44 and 45 are patentable over the cited reference.

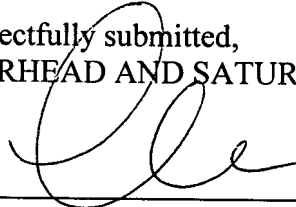
Claims 16-17 depend from Claim 1. Claims 44-45 depend from Claim 29. For reasons set forth above, Farmer neither discloses nor suggests independent Claims 1 and 29 and also neither discloses nor suggests Claims 16-17 and 44-45 that depend, respectively, therefrom.

In view of the foregoing, Applicant respectfully requests that the rejection be reconsidered and withdrawn.



Based on the above, Applicant respectfully requests that the Examiner reconsider and withdraw all outstanding rejections and objections. Favorable consideration and allowance are earnestly solicited. Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 508-898-8604.

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Date: July 26, 2007